

Ayush Kansal

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EDUCATION

- University of Illinois Urbana-Champaign** — *Bachelor of Science in Computer Science* Expected May 2029
- Relevant Coursework: Discrete Structures (CS 173), Linear Algebra (MATH 257), Calculus III (MATH 241).
- University of California, Berkeley** — *concurrent coursework* Jun 2024 – Aug 2025
- CS 61A Structure and Interpretation of Computer Programs (A–); CS 61BL Data Structures (A); Data C8 Introduction to Data Science (A).

TECHNICAL SKILLS

- Languages:** Python, Java, C, Swift, JavaScript
- CS Fundamentals:** data structures, algorithms, object-oriented design, discrete math, linear algebra
- Systems & Tools:** Linux/Unix, Git, Bazel, FreeRTOS, CAN bus, Xcode
- ML & AI:** PyTorch, NumPy, LLM integration (Claude API, Apple Foundation Models), computer vision, speech recognition

PROJECTS

- Lotus Bud Academy Daycare Platform** (lotusbudacademy.com/software) — sole developer of a full-stack iOS, Android, and web platform in production: daily reports, photos, attendance, messaging, invoicing, and an AI assistant.
- NoteFlash** (iOS/iPadOS; SwiftUI, SwiftData, Foundation Models) — flashcard app that turns notes, scanned pages, PDFs, slides, and Google Drive files into decks, writing cards on-device with Apple Intelligence and re-syncing changed cards from linked Drive files.
- BTC Survivor** (Python, NumPy) — always-on service that ingests live Coinbase order-book and trade streams, turns them into features every minute, and runs 20 learning bots, with checkpoint/resume, a replay harness, a read-only dashboard, and a systemd unit; runs 24/7 on a Linux server and passed a memory soak test (paper trading only).
- FaceUnlock** (macOS; Vision, Core ML) — fully on-device face recognition: Vision detection, 5-point alignment, Core ML embeddings with cosine matching, and blink-based liveness to reject photos, with unit-tested core logic.
- Volt** (macOS; SwiftUI, AppKit, IOKit, CoreBluetooth) — battery menu bar app reading live current and voltage from the SMC, iPhone and iPad battery over Bluetooth LE, and AirPods levels decoded from Continuity broadcasts.

ENGINEERING EXPERIENCE

- Illini Electric Motorsports** — *Firmware Developer, Battery Management System* Sep 2026 – Present
- Wrote and shipped real-time C firmware on FreeRTOS (built with Bazel) for the race car's battery management system: a 1 Hz CAN heartbeat, bench-verified with a CAN bus analyzer, and a charging algorithm for the 140-cell pack that tapers current as the highest cell nears its voltage limit.
- Lab AK** — *Software Engineer* 2026 – Present
- Led development of Model mAKe Smith (labak.ai): ports, runs, and compares AI models on remote edge hardware through chip-vendor toolchains (Cadence NeuroWeave), with side-by-side speed and accuracy results.
 - Led development of Model Analyzer (mma.labak.ai): inspects ONNX, TFLite, Keras, PyTorch, and TensorFlow models layer by layer, with weights and multiply-accumulate cost, entirely in the browser.
- PilotCity** — *Software Developer; Data Scientist* Nov 2022 – Aug 2024
- Fixed defects before deployment, optimized code paths, and cleaned and analyzed large datasets.
- Sseed Studio** — *Intern* Jun – Aug 2023
- Built edge-AI software for microprocessors, including an AI subject-tracking camera that kept tracking off-frame.
- Alan AI** — *Intern* Jul – Sep 2022
- Built a voice-activated GitHub FAQ on Alan AI's speech recognition platform, targeting a ~30% reduction in support call wait times.

RESEARCH EXPERIENCE

- ASDRP** — *Lead Researcher, Author, and Developer* Jun 2024 – Jan 2026
- Built an iOS app and an AI Google Chat bot that manage profiles, lab workflows, and reminders for 30+ lab groups and 1,100+ student researchers.
 - Co-first author of a paper under review at the *Journal of Emerging Investigators*; built the Python pipeline that processed 150 hours of audio across four speech recognition systems and found speed thresholds that cut transcription cost ~20%.
- Osteoporosis Gait Sensor** — *Lead Developer and Designer* Jun 2024 – Present
- Designed and prototyped a wearable foot sensor that uses machine learning to detect early osteoporosis indicators from gait data.
 - Built the instrument around a Raspberry Pi and a 16-sensor array laid out in the shape of a foot, with a real-time collection, preprocessing, and model-based analysis pipeline.

LEADERSHIP

- Byte By Byte Coding** — *CEO and Co-Founder* Dec 2024 – Present
- Founded a 501(c)(3) teaching computer science to 50+ underserved students; built the curriculum and lead volunteer instructors.
- Fremont Debate Academy** — *Lead Instructor and Director of Operations* Dec 2022 – Jun 2025
- Directed operations and coached 100+ students within a program serving 7,500; trained incoming instructors to scale the program.
- Boy Scouts of America** — *Eagle Scout; Senior Patrol Leader; NYLT Staff* Aug 2018 – Jun 2026
- Taught leadership at National Youth Leadership Training; Presidential Volunteer Service Award (Gold) twice for 100+ service hours each.